Shermco industries

Training Catalog

2018 - 2019

One Line. One Company.

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CEUs from IEEE

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FEATURED CONTENT

Shermco's On The Move!

by **James White, Vice President of Training Services**

New Training Centers

These are exciting times for Shermco's Training Services Department. By the end of the year we will have four permanent training centers in the US and will open our Regina, Saskatchewan, Canada center, as well. These are not just lecture halls, but full-service training centers, as we have developed in our Irving, Texas facility.

Our training centers will include our main training center located in Irving, Texas plus, Houston, Texas, Cedar Rapids, Iowa and, through our NETA partner Tony Demaria Electric, in the Los Angeles, CA area. More information on these training centers is located inside the training schedule/catalog.

New Training Programs

We will be offering two protective relay training programs in all locations: Fundamentals of Protective Relay Maintenance and Testing and Introduction to SEL Relays. This is what Shermco Engineering Services is so well known for. To finally be able to offer protective relay training programs that are designed to bring your technicians up to the level they need to perform relay calibration and to interact with SEL relays comfortably is exciting, indeed!

New Web-Based Training

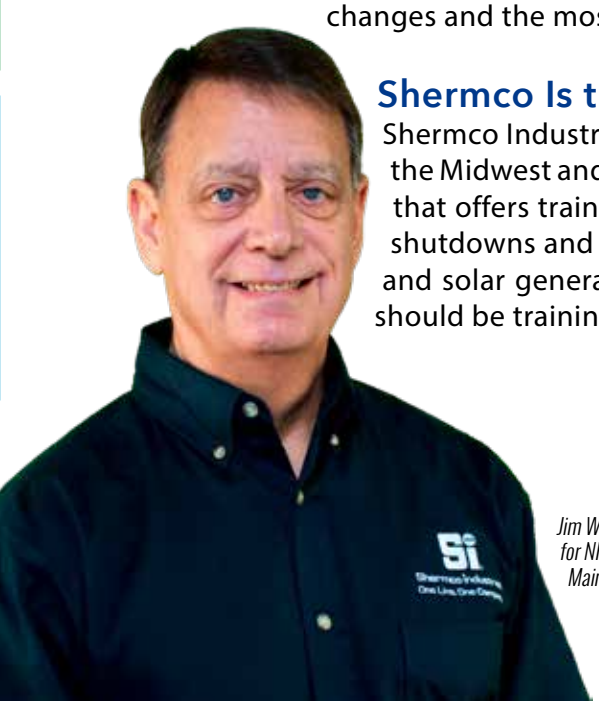
Do you have technicians who require basic skills training or refresher training? Shermco Training Services has something that may be of interest. We provide our field service technicians web-based training through our ShermcoYou training, which is internal only. We are updating these programs so we can offer them to the public this year. These are not intended to be full-fledged training courses nor will they take the place of our hands-on courses. What these web-based programs will do is provide that "tune-up" needed once your technicians and engineers have had hands-on training, but maybe have not had the opportunity to perform it often enough to be proficient.

New Safety and Code Training Content

Shermco has two representatives to NFPA 70E and also to various NEC code-making panels. We have updated our training programs, not just telling you what it says, but explaining what the intent of the committee was when we balloted the changes. Whichever safety or code training you attend, it will reflect the latest changes and the most current information available.

Shermco Is the Best Choice for Technical and Safety Training

Shermco Industries employs approximately 1,000 workers from the Gulf Coast, through the Midwest and throughout Canada. We are an electrical power field services company that offers training to meet the requests and demands of our customers. We perform shutdowns and turn-arounds on utility systems, industrial facilities, data centers, wind and solar generation sites, hospitals and more. We train our own technicians and we should be training yours, as well.



Jim White is the Vice President of Training Services for Shermco Industries. Jim is also a member of the NFPA Technical Committee for NFPA 70E "Standard for Electrical Safety in the Workplace" and NFPA 70EB "Recommended Practice for Electrical Equipment Maintenance" and a member of the ASTM F 18 Committee.

Service Centers

Shermco Industries is the leader in electrical power systems maintenance, repair, testing and training. Shermco services include electrical systems maintenance, electric motor repair, electric motor remanufacturing, wind generator repair and maintenance, circuit breaker and switchgear repair, circuit breaker and switchgear retrofit, technical skills training, electrical safety training and more.

From high-voltage power generators to the smallest switches and circuit breakers, Shermco is the name you trust to keep operations humming. Whether conducting repairs on-site or at our facility, our NETA-certified electrical technicians are ready to serve you in a timely manner.

Since 1974, we have kept our customers operating more efficiently and safely. We'll keep your electrical components running with first-class maintenance procedures and quality parts. Allow our seasoned training teams to show your employees how to avoid mechanical breakdowns and keep your electrical equipment online. We'll save you money with smoother operations.

Austin
1705 Hur Industrial Blvd.
Cedar Park, TX 78613
Phone: 512.267.4800

Angleton
33002 FM 2004
Angleton, TX 77515
Phone: 979.848.1406

Beaumont
11105 A Eastex Freeway,
Beaumont, TX 77708
Phone: 409.363.5610

Calgary
3434 25th Street NE
Calgary, AB, T1Y 6C1
Phone: 403.769.9300

Cedar Rapids
1711 Hawkeye Dr.
Hiawatha, IA 52233
Phone: 319.377.3377

Chicago
112 Industrial Pkwy
Minooka, IL 60447
Phone: 815.467.5577

Columbus
4383 Professional Parkway
Groveport, OH 43125
Phone: 614.836.8556

Dallas Field Services
2425 East Pioneer Dr.
Irving, TX 75061
Phone: 972.793.5523

Dallas HQ
2425 East Pioneer Dr.
Irving, TX 75061
Phone: 972.793.5523

Des Moines
5145 NW Beaver Dr.
Johnston, Iowa 50131
Phone: 515.265.3377

Detroit
12796 Currie Court
Livonia, MI 48150
Phone: 734.469.4050

Edmonton
3731 98th Street,
Edmonton, AB, T6E 5N2
Phone: 780.436.8831

Houston
3807 S. Sam Houston Pkwy West
Houston, TX 77053
Phone: 281.835.3633

Minneapolis/St. Paul
998 E. Berwood Avenue
Vadnais Heights, MN 55110
Phone: 651.484.5533

Omaha
4670 G Street
Omaha, NE 68117
Phone: 402.933.8988

Regina
1033 Kearns Crescent
Regina, SK, S4K 0A2
Phone: 306.949.8131

San Antonio
12000 Network Blvd.
Building D, Suite 410
San Antonio, TX 78249
Phone: 210.877.9090

Saskatoon
233 Faithfull Crescent
Saskatoon, SK , S7K 8H7
Phone: 306.955.8131

Sweetwater
1301 Hailey St.
Sweetwater, TX 79556
Phone: 325.236.9900

Tulsa
4510 South 86th East Avenue
Tulsa, OK 74145
Phone: 918.234.2300

Winnipeg
1375 Church Avenue
Winnipeg, MB, R2X 2T7
Phone: 204.925.4022


Cedar Rapids

Houston


Regina

On-site Training

Shermco has fully developed training programs that we can bring to you. Most courses are available at your job site as well as open-enrollment classes. Many classes can be customized to customer-specific equipment and devices. Our on-site training programs provide the most effective hands-on training experience at very cost-efficient rates. Contact us if we can provide training programs at your job site.

The Benefits of On-Site Training:

- Address your company's systems and equipment
- We train around your schedule
- Modified classes to address your specific needs
- Personnel available on site for emergencies
- Consistency in your personnel training

CEUs from IEEE

CEUs now available on select courses through IEEE. Call for details!

Some additional on-site only courses:

- **4hr. Electrical Safety for Non-Electrical Personnel**
- **2018 NFPA 70E Updates - Seminar**
- **Arc Flash Awareness Seminar**
- **Electrical Maintenance & Safety for Water/Wastewater Facilities**
- **Metering Safety Course**
- **Protection System Operations & Maintenance**
- **Substation Maintenance Seminar**
- **Testing & Maintaining Power Transformers**
- **Motor Basics & Testing Seminar**
- **Battery Systems Maintenance & Testing**
- **High & Low Voltage Electrical Safety**

To book an on-site class

Call 888-SHERMCO

Switchgear Operations, Safety & Troubleshooting for Operators

About this course...

Students will learn the electrical operating and control systems of a variety of low and medium voltage circuit breakers, switches, motor control centers and contactors. Topics will include safety a operation, troubleshooting and correcting operating problems to ensure safe, correct and reliable operation. This includes an overview of low- and medium-voltage circuit breakers, and external systems essential for proper breaker operation such as switchgear cubicles, switches and motor control centers.

Who should attend...

Operators, facility engineers, first line supervisors, and others responsible for managing day to day operations of electrical systems and maintenance. Intended for those whose duties may include circuit breaker operation or supervise those operations.

Prerequisites...

It is recommended that students have basic electrical training, some field experience and basic knowledge of switchgear.

The Details...

Course Length . . . . . 2 days (16 contact hours)*
Tuition $830
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of the current ANSI/NETA MTS (copy of NFPA 70E available at an additional cost).
Updated 2016 SDN

* If hosted at Shermco's training facility.

You'll learn...

- How to read and interpret electrical drawings related to circuit breaker operation and their interaction with power systems
- How to use electrical drawings to troubleshoot and correct problems
- Learn sequential electrical operation of a variety of solenoid and stored energy breakers
- Electrical and mechanical features, functions and operation of circuit breakers
- Diagnose problems, determine level of corrective action required, and learn who should perform corrective actions
- Routine maintenance and testing of low- and medium-voltage circuit breakers in accordance with ANSI/NETA MTS Standard for Maintenance Testing Specifications
- Theory and operation of test equipment
- Insulation and contact resistance testing
- High potential and vacuum bottle testing
- Primary and secondary injection testing
- Read and understand time/current curves
- Functions, features, maintenance and testing of breaker cells and auxiliary systems
- Evaluate contracted work, understand and correctly interpret repair orders, maintenance work and test reports
- A hands on training program (~50% when held at Shermco facility, Irving, TX and other select locations) augmented with round table discussions

Online registration now available at:
www.shermco.com/training

Low- and Medium-Voltage Circuit Breaker Maintenance and Testing

About this course...

Circuit breakers are the most critical components of a power system and the facility owner or manager must make sure they are operating properly to maintain both reliability and safety. Understanding how they work, how they should be operated, how they are tested and how to interpret those test results are necessary even if the repairs and overhauls are performed by a contractor. This course will provide those details along with basic inspection and repair procedures.

Who should attend...

Technicians, electricians, first line supervisors, and others responsible for full range maintenance, testing and repair of all types of low- and medium-voltage circuit breakers. Intended for those whose intent is to provide service and support of their circuit breakers at a level that would normally be performed by a commercial repair facility, as well as those who may need a deeper understanding of circuit breakers in order to make repairs as needed until a spare breaker can be installed.

Prerequisites...

It is recommended that students have basic electrical training, some field experience and basic knowledge of switchgear.

The Details...

Course Length . . . . . 4.5 days (36 contact hours)
Tuition $1,760
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of the current ANSI/NETA MTS (copy of NFPA 70E available at an additional cost).

You'll learn...

- Construction and operation of a variety of molded-case, insulated-case and low-voltage power (draw-out) circuit breakers
- Construction and operation of common medium-voltage metal-clad switchgear and draw-out circuit breakers rated from 2.3 kV through 38 kV
- Correctly identify circuit breaker ratings and limitations and interpret time-current curves
- Identify the primary causes of failure and how to correct them
- Disassemble a low-voltage and medium-voltage circuit breaker, and perform required inspection, maintenance and adjustments; then reassemble
- How to properly perform and evaluate tests including contact resistance, insulation resistance, AC and DC overpotential, timing, vacuum bottle integrity, primary and secondary injection
- Maintenance requirements and procedures in accordance with NETA, ANSI, NEMA and NFPA standards
- Cubicle maintenance and testing, racking mechanisms and control devices
- Interaction between circuit breakers and cubicles, and protective devices and control schemes
- Safety aspects of circuit breaker racking, handling and operation
- Hands-on (~50%) training program augmented with round-table discussions

Online registration now available at: www.shermco.com/training

Substation Maintenance 1 (Circuit Breakers, Batteries and Grounding)

About this course...

Many industrial customers choose to perform general testing and maintenance on incoming utility substations and downstream substations within the plant perimeters. Both technical competence and proper safety practices are critical to these procedures. This class provides the information and hands-on training to test and maintain most of the major components of the substation except for the main transformer and protective relays.

Who should attend...

Technicians, electricians, first line supervisors, and others responsible for full range maintenance, testing or repair of all types of medium-voltage circuit breakers, batteries, and ground systems.

Prerequisites...

It is recommended that students have basic electrical training, some field experience and basic knowledge of switchgear.

The Details...

Course Length . . . . . 3.5 days (28 contact hours)
Tuition $1,420
CEUs. . . . . Available

Each open-enrollment student will receive a course text.
Updated 2016 SDN

You'll learn...

- Theory, construction and operation of common types of medium-voltage metal-enclosed switchgear and circuit breakers, including air-magnetic and vacuum
- How to interpret ratings and nameplate data and identify breaker ratings and limitations
- Understand how medium-voltage circuit breakers operate, and know the primary causes of failure
- Safety requirements when operating, racking, testing or maintaining circuit breakers
- Required testing and maintenance of medium-voltage metal-enclosed circuit breakers and switchgear in accordance with ANSI/NETA MTS
- Tests commonly performed on circuit breakers and their associated switchgear
- How to maintain station batteries in accordance with ANSI/NETA MTS
- Ground testing theory and interpreting test results in accordance with ANSI/ NETA MTS

Hands-on lab sessions:

- Racking circuit breakers
- Perform and evaluate common circuit breaker electrical tests including insulation resistance, DC overpotential, contact resistance, insulation power factor and timing utilizing equipment from a variety of manufacturers
- Perform routine maintenance on medium-voltage air and vacuum circuit breakers
- Test and evaluate battery systems
- Perform fall-of-potential ground test and interpret results

Substation Maintenance 2 (Transformers and Relays)

About this course...

Whether it is a generator step-up or a distribution substation, it is the transformer that does all the work. This course is designed to introduce the design and operation of these large three-phase transformers including how to test and maintain them for maximum reliability. It will also include how to test a selection of substation protective relays, how to interpret the results of those tests and how to properly maintain the relay components.

Who should attend...

Managers and technicians responsible for testing and maintaining electrical substations.

Prerequisites...

It is recommended that students have basic electrical training, some field experience and basic knowledge of switchgear.

The Details...

Course Length . . . . . 4 days (32 contact hours)
Tuition $1,760
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of the current ANSI/NETA MTS.
Updated 2016 SDN

You'll learn...

- Theory, construction and operation of three-phase power transformers
- How to interpret ratings and nameplate data
- Required testing and maintenance of dry-type and liquid-insulated power transformers in accordance with ANSI/NETA MTS
- How to perform electrical testing of power transformers and interpret test results
- Theory and operation of protective relays, including overcurrent, over/undervoltage and differential
- What tests and maintenance are typically performed on the protective relays in accordance with ANSI/NETA MTS
- How to interpret the test results
- How to download and distribute event files from Schweitzer (SEL) relays
- Hands-on (~40%) training program augmented with round-table discussions

Industrial Plant Electrical Maintenance

About this course...

This course covers what maintenance personnel and managers should know about maintenance and how it affects plant reliability. The maintenance and testing required for common plant devices, including transformers, protective relays, circuit breakers and cubicle maintenance, motors and motor controls is covered in detail. Based on the NFPA 70E and ANSI/NETA Maintenance Testing Specifications, this intensive training program provides the latest information on maintaining and testing electrical power system equipment, including what to do, when to do it and interpreting test results.

Who should attend...

Electricians, technicians, supervisors, and plant engineers who perform the maintenance, testing and evaluation of common types of circuit breakers, transformers, motors and motor controls found in industrial facilities.

Prerequisites...

Students should have basic electrical training. Some field experience is recommended but not mandatory.

The Details...

Course Length . . . . . 4 days (32 contact hours)
Tuition $1,420
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of the current ANSI/NETA MTS.
Updated 2016 SDN

You'll learn...

- Low- and medium-voltage circuit breakers
- Motor maintenance
- Switches and disconnects
- Transformer maintenance and testing
- How to interpret results and trend analysis
- How to improve plant reliability through common-sense approaches to operation and maintenance
- How to lower operation and maintenance cost
- How maintenance planning can reduce unscheduled downtime
- Hands-on (~40%) training program augmented with round-table discussions

Online registration now available at: www.shermco.com/training

Why Raytech?

99% of All Raytech Equipment Sold is Still in Operation Today

Over 20 years of innovative design and manufacturing means Raytech's equipment is built for the harsh environments of the testing industry. Your test equipment is assured to be in service for a long time.

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Raytech U.S.A. Inc.

Toll Free: 888 484 3779 | Phone 267 404 2676
118 South 2nd Street, Perkasie, PA 18944
www.RaytechUSA.com

Splicing and Termination of Medium-Voltage Cables

About this course...

Medium-voltage cable systems are used extensively in industrial, utility distribution, and wind farm electrical systems. Modern cable construction and splicing materials rely on the technician's ability to properly prepare cables and install cable components. Due to the high electrical stresses in these systems, many early life failures may be experienced if cables are not properly terminated or spliced. This course introduces modern cable splicing techniques and materials. We provide an in depth understanding of controlling electrical stresses and cable construction with more than half of the class time spent with hands-on splicing and terminating of cables.

Who should attend...

Field and plant maintenance technicians and others who perform splicing and termination of medium-voltage solid dielectric cables

Prerequisites...

It is highly recommended that students should have basic electrical training, some field experience and basic knowledge of medium-voltage power systems.

The Details...

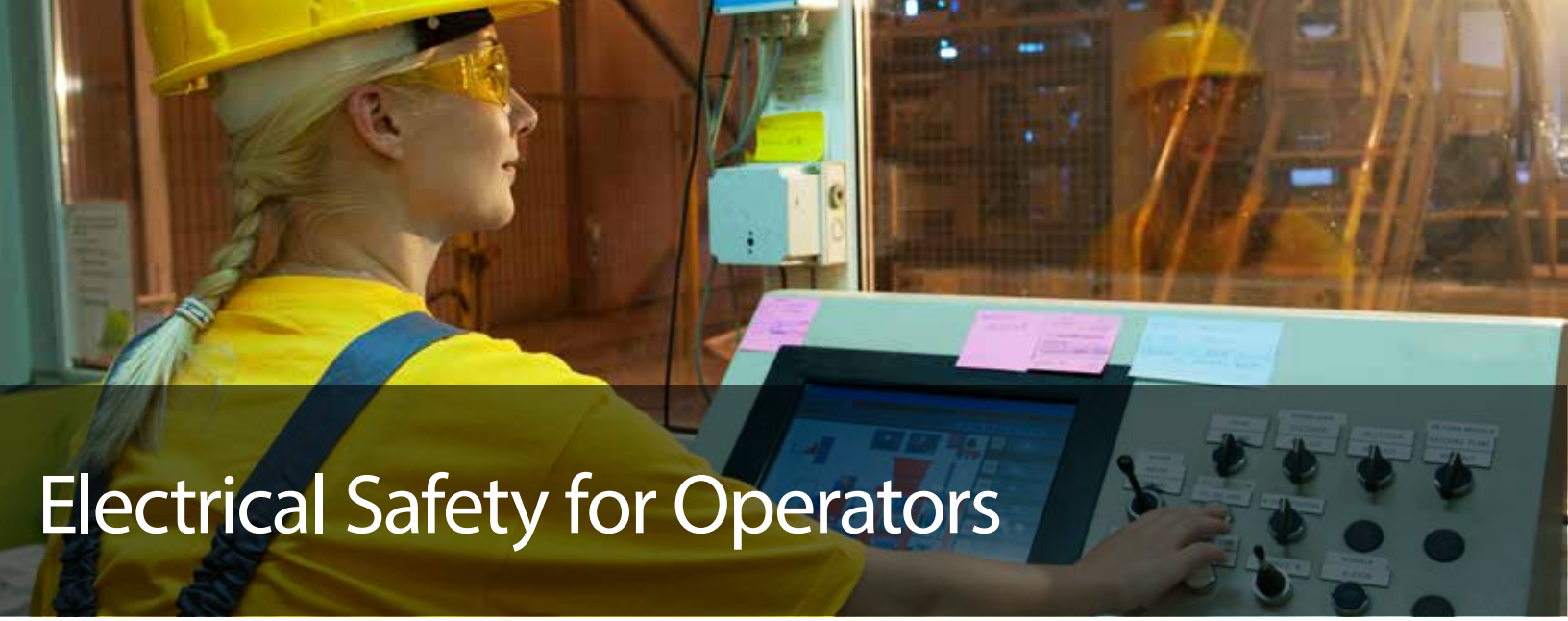
Course Length . . . . . 4 days (36 contact hours)
Tuition $2,150
CEUs. . . . . Available

Each student will receive course text.

You'll learn...

- Basic electrical principles and construction of common types of medium-voltage cables
- Cable construction basics
- Cable theory
- Failure modes
- Cable preparation
- Testing and evaluation of power cables
- Splices and terminations
- Hands on lab sessions where students construct several types of splices and terminations

Online registration now available at: www.shermco.com/training



Electrical Safety for Operators

About this course...

This training course allows students to understand, as an operator, the risks associated with their job. Operators will be informed of what tasks they may or may not be qualified to do and the risks associated with those tasks. The student will be able to recognize what risks are present when operating circuit breakers, switches and panel boards. The course progresses through various Lockout/Tagout standards (29CFR1910.147 and .333) and reviews the pertinent portions of the Electrical Safety-Related Work Practices regulation and NFPA 70E as they apply to personnel working as an operator.

Who should attend...

Equipment Operators who are not qualified persons by OSHAs definition.

Prerequisites...

Basic electrical knowledge and terms.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550
CEUs. . . . . Available

You'll learn...

- Hazards of electricity
- Lock-out tag-out
- Electrical safety-related work practices
- Proper methods to remove or install draw-out circuit breakers
- Operation of switches and breakers
- Personal Protective Equipment

Online registration now available at: www.shermco.com/training

FEATURED ARTICLE

What Is Your Perception of Risk?

by Jim White

Almost every incident I've investigated in the field has involved improper performance of or not performing the absence of voltage test before starting a task. It seems as though a person's perception of the risk is not in line with safe work practices. Risk perception continues to be an issue that creates safety issues within organizations. Many technicians have been taught by On-the-Job training or what I like to call the tribal knowledge method and probably use a skill-based method of perceiving risk. Skill-based risk perception is when a person performs a task that involves practiced actions and is very familiar with the task and the situation; they lean on their experience. Their performance of the task is not as affected by external conditions as some of the other performance modes. Processing of information can be measured in milliseconds, so decisions are made quickly. That's the good news.

The bad news is that when a person relies on skill-based performance they devote less of their mental resources to the task at hand; think of an assembly-line worker performing the same task over and over. They may perform the same task hundreds of times without change. This situation causes the person to become inattentive to the task being done. If something should change with the task, such as a defective component, different assembly requirements or sweaty hands, the potential for an incident increases. Another error that occurs with the skill-based performance mode is a perceived reduction in risk. People tend to not recognize the risk associated with a task or work condition they have performed many times.

Safety issues, such as not performing the absence of voltage test reliably can have several, interrelated factors that must be dealt with. I like to think of it as "whack-a-mole". One issue raises its head and you whack it. As soon as that is dealt with another issue raises its head and you whack it. Sooner or later you manage to whack all the moles, but more than likely they outlast you.

One Problem; Multiple Possible Factors

In addition to the factors listed above, other reasons for not performing an absence of voltage test (or taking shortcuts) could be the person's attitude towards work, work that occurs close to quitting time or unexpected overtime. All of these may cause varying levels of inattention. When people get towards the end of their shift they tend to start thinking about what they are going to do after they get off work. If overtime pops up and the person is not prepared for it, such as in an emergency situation it could also cause some level of inattention due to the stress created. A careless work ethic is almost impossible to cure, though.

Problems at home can affect people's attention and focus. These problems can be overwhelming and many people are distracted by thinking of home situations instead of the task at hand. People don't mean to be inattentive, but it is almost unavoidable for most of us when faced with personal or family issues. Loud, unexpected noises, other people talking to us, our cellphone ringing; there are many ways to cause us to be distracted. All of us, or almost all of us, drive a motor vehicle of some type. How many times have we observed someone in another vehicle texting or talking on the phone while trying to drive? We don't drive well when our attention is focused primarily on another task, even though most of the offenders would claim they are excellent "multitaskers". We do not multitask and perform tasks reliably. We might perform one task okay as we try to perform other tasks, but our attention will be continually split between one task and the other. In a driving situation our attention might be on the wrong task at the wrong time.

Our bodies will try to power the brain down when given the opportunity. An excellent example is that of driving a vehicle on an interstate highway. I remember when I was growing up there used to be commercials on TV about "highway hypnosis". As we drive along with the cruise control set and a long stretch of highway in front of us, our attention is reduced. This occurs naturally and without any intentional effort from us, because our bodies work to conserve energy. Since the brain is the largest energy consumer of our body, it throttles back into what I like to refer to as "sleep mode". If a police car approaches with its lights on, our focus is instantly returned to the task at hand (driving). We are on full battle alert. When the police car passes us, we return to that lower level of attention.

We have a finite pool of mental resources to pull from and the more distractors we throw into the mix, the more of our mental resources are used up trying to account for them. Some of the distractors mentioned above may be small at times, but at other times can be huge. When performing hazardous tasks, the need to maintain focus is even more critical for safety.

One Last Element

One other factor to discuss is a company's work culture. Some work cultures can create unsafe attitudes and actions. A "get r done" work culture can allow workers to place themselves in harm's way, just to complete a job as quickly as possible. This is usually unintentional, but the results are the same as if it were. Giving workers praise for performing tasks in an unsafe manner because they "saved the company money" or for other reasons is counter to good safety management.

A company's actions don't have to be overt to discourage safe work practices. Not enforcing safety rules or giving special consideration to those who violate corporate safety policy has the same effect. Saying, "I can't discipline so-and-so. He might quit and how could I replace him" is wrong-headed thinking. If so-and-so frequently flouts safe work practices, it would best to let him seek other employment. Doing so might actually save his/her life.

After the Fact

OSHA and NFPA 70E require workers to be qualified persons if their work could expose them to electrical hazards. It is the company who determines if a person is qualified or not. There is no certification or testing that can prove a person is qualified. However, if a person is involved in an incident triggering an OSHA investigation, the chances are good that OSHA would find they are not qualified. Several cycles ago, OSHA's then-Director of the Office of Safety Engineering, Joe Pipkin told the NFPA 70E committee that the fact there was an accident was proof of wrongdoing; all they had to do was show who did what wrong. That perspective is still in effect today.

Jim White is the Vice President of Training Services for Shermco Industries. Jim is also a member of the NFPA Technical Committee for NFPA 70E "Standard for Electrical Safety in the Workplace" and NFPA 70EB "Recommended Practice for Electrical Equipment Maintenance" and a member of the ASTM F 18 Committee.

Shermco Canada Training Courses

Qualified Electrical Worker Training

About this course...

Let us teach your employees to identify electrical hazards; assess risks and implement risk control according to a hierarchy of methods. This two-day course exceeds and adheres to CSA Z462-18 and the Occupational Health and Safety Regulations. In addition, we provide hands-on training, which includes the operation and safety of power systems equipment in our 53' mobile training trailer.

This course is intended for technicians, field-service personnel, electricians, supervisors and engineers who supervise employees who perform operation or maintenance work on electric devices and equipment with voltage ratings from 400 / 600 / up to high voltage.

Lab Time & Prerequisites: This course requires basic electricity knowledge.

Course Length . . . . . 2 days (16 contact hours)
Tuition . . . . . $1,195.00 CDN

Each open-enrollment student will receive a course text and a copy of CSA Z462-18.
Prices subject to change January 1, 2017.

Qualified Electrical Worker - Refresher

About this course...

This one-day course is designed for those who have completed the Qualified Electrical Worker training course and require the refresher course for updates on CSA Z462-18 and other current regulations and standards.

This course is intended for technicians, field-service personnel, electricians, supervisors and engineers who supervise employees who perform operation or maintenance work on electric devices and equipment with voltage ratings from 400 / 600 / up to high voltage.

Lab Time & Prerequisites: This course requires previous completion of the QEW training course. This course is seminar-based with no hands-on labs.

Course Length . . . . . 1 day (8 contact hours)
Tuition . . . . . $425.00 CDN (option to purchase CSA Z462-18 for $125 CDN)
CEUs. . . . . Available

Each open-enrollment student will receive a course text.
Prices subject to change January 1, 2017.

Electrical Safety for Non-Electrical Workers

About this course...

This 8-hour course concentrates on educating non-electrical personnel on how to understand electrical hazards, and the risks associated with energized equipment. This course will teach your employees to assess the hazards, control exposure and reduce the risks associated.

This course is intended for technicians, operators, supervisors, field engineers, plant engineers and others who work around electrical systems.

Lab Time & Prerequisites: This course is seminar-based with no hands-on labs.

Course Length . . . . . 1 day (8 contact hours)
Tuition . . . . . $425.00 CDN

Each open-enrollment student will receive a course text.
Prices subject to change January 1, 2017.

Electrical Maintenance Planning

About this course...

Participants will understand the maintenance and testing requirements for key components in an industrial electrical system. They will learn how to determine a maintenance strategy for electrical equipment in order to minimize unscheduled outages by improving equipment reliability and keeping your employees safe in accordance with CSA Z463.

This course is intended for managers, technicians, supervisors, field engineers, plant engineers and others who determine the scope and schedule the maintenance, testing and evaluations on industrial switchgear, distribution cables, protection systems, circuit breakers, ground systems, battery banks and transformers.

Lab Time & Prerequisites: Hands-on training (± 20%) program augmented with round-table discussions. The student should have basic knowledge of AC/DC electricity.

Course Length . . . . . 1 day (8 contact hours)
Tuition . . . . . $695.00 CDN (option to purchase copy of CSA Z463 for $125 CDN)

Shermco Canada Training Courses

Battery Bank Testing

About this course...

This training course will introduce students to stationary batteries and the maintenance and testing they require. The student will learn to identify various types of batteries, their construction and applications. The student will define safety and hazards related to batteries and testing. We will look at various failure modes related to batteries and how to identify each failure. Tests and inspections procedures will be explained along with the interpretation of test results.

This hands-on course is intended for technicians, field-service personnel, electricians, supervisors and engineers who supervise employees who perform inspections or maintenance work on battery banks.

Lab Time & Prerequisites: Hands-on training (± 20%) program augmented with video and round-table discussions. Attendees should have basic electrical training. Some field experience is also recommended, but not mandatory.

Course Length . . . . . 2 days (16 contact hours)
Tuition $1,195.00

Circuit Breaker Maintenance and Testing

About this course...

Students will learn the electrical and electromechanical operating and control systems of a wide variety of circuit breakers. They will review safety aspects and learn how to inspect, test and perform preventative maintenance. All maintenance inspections and tests are done in accordance with NETA, ANSI and NEMA standards.

This course is intended for field and shop technicians, circuit breaker rebuilders, supervisors and others responsible for the testing and maintenance industrial circuit breakers.

Lab Time & Prerequisites: Hands-on training (± 20%) program augmented with video and round-table discussions. Attendees should have basic electrical training. Some field experience is recommended, but not mandatory.

Course Length . . . . . 2 days (16 contact hours)
Tuition . . . . . Please Contact

Basic Protective Relay Training

About this course...

Our goal is to improve safety in the workplace by instructing personnel on how to understand site specific functions and applications of protective relaying. Students will gain troubleshooting skills to improve plant reliability. We will teach employees how to read and interpret electrical drawings related to relay operation and power system interaction specific to an industrial working environment. The hands-on lab will provide an opportunity to build their own control circuit using familiar relays.

This hands-on course is intended for electricians, technicians and engineers responsible for acknowledging and interpreting solid-state protective relay alarms and notifications.

Lab Time & Prerequisites: Hands-on training (± 20%) program augmented with round-table discussions. The student should have basic knowledge of AC/DC electricity.

Course Length . . . . . 2 days (16 contact hours)
Tuition . . . . . $995.00 CDN

Canada Training Schedule

Qualified Electrical Worker Training

Regina, SK
2018 2/26 • 6/5 • 9/25 • 12/4

Saskatoon, SK
2018 2/13 • 5/29 • 11/27

Calgary, AB
2018 3/6

Edmonton, AB
2018 3/13

Winnipeg, MB
2018 4/17

Basic Protective Relay Training

Regina, SK
2018 5/9 • 10/18

Saskatoon, SK
2018 9/18

Calgary, AB
2018 10/2

Edmonton, AB
2018 10/18

Winnipeg, MB
2018 11/22

Qualified Electrical Worker : Refresher

Regina, SK
2018 2/26 • 6/5 • 9/25 • 12/4

Saskatoon, SK
2018 2/13 • 5/29 • 11/27

Calgary, AB
2018 3/6 • 10/4

Edmonton, AB
2018 3/13

Winnipeg, MB
2018 4/17

Electrical Safety for Non-Electrical Workers

Regina, SK
2018 3/6 • 11/6

Saskatoon, SK
2018 3/13 • 9/20

Calgary, AB

Electrical Maintenance Planning

Regina, SK
2018 4/10 • 10/18

Saskatoon, SK
2018 4/24

Edmonton, AB
2018 10/16

Winnipeg, MB
2018 11/20

For more information on our Shermco Canada training...

Please contact:
888-SHERMCO
canadatraining@shermco.com

Industrial Plant Electrical Maintenance

Dallas, TX
2018 4/30 • 10/30
2019 3/4 • 10/29

Low- to Medium-Voltage Circuit Breaker Maintenance and Testing

Dallas, TX
2018 2/12 • 6/18 • 10/1
2019 2/11 • 6/17 • 9/30

Wilmington, CA
2018 4/9 • 11/12
2019 4/8 • 11/11

Substation Maintenance 1 (CB, Grounding & Batt)

Dallas, TX
2018 3/6 • 7/16 • 11/5
2019 3/5 • 7/16 • 11/5

Wilmington, CA
2018 3/6 •11/11
2019 2/26 • 8/20

Substation Maintenance 2 (Transformers and Relays)

Dallas, TX
2018 3/12 • 7/23 • 11/12
2019 3/12 • 7/23 • 11/12

Switchgear Operations, Safety & Troubleshooting for Operators

Dallas, TX
2018 4/23 • 7/9 • 10/22
2019 1/21 • 4/22 • 7/8 • 10/21

Splicing and Termination of Medium-Voltage Cables

Dallas, TX
2018 2/26 • 7/30 • 12/3
2019 3/25 • 7/29 • 12/2

General Technical Basic Electrical Fundamentals

Dallas, TX
2018 5/15 • 9/5
2019 1/8 • 5/14 • 9/17

Motor Maintenance and Testing

Dallas, TX
2018 8/14
2019 1/29 • 8/13

Troubleshooting and Electrical Print Reading

Austin, TX
2018 5/30 • 10/29
2019 5/29 • 10/29

Dallas, TX
2018 4/10 • 10/16
2019 4/9 • 10/15

Cedar Rapids, IA
2018 5/22 • 10/31
2019 5/21 • 11/5

Houston, TX
2018 5/8 • 10/9
2019 5/7 • 10/8

St. Paul, MN
2018 3/27 • 9/18
2019 3/26 • 9/17

Tulsa, OK
2018 2/20 • 7/31
2019 2/19 • 7/30

National Electrical Code

Austin, TX
2018 4/2 • 11/26
2019 4/2 • 11/19

Dallas, TX
2018 2/21 • 8/21
2019 2/19 • 8/22

Cedar Rapids, IA
2018 3/19 • 7/17
2019 3/19 • 7/16

Houston, TX
2018 4/24 • 8/7
2019 4/23 • 8/6

St. Paul, MN
2018 5/2 • 10/22
2019 5/1 • 10/22

Tulsa, OK
2018 4/10 • 9/25
2019 4/9 • 9/24

Basic Electrical Technical Skills

Dallas, TX
2018 5/21 • 9/10
2019 1/15 • 5/21 • 9/10

Fundamentals of Protective Relay Testing and Maintenance

Dallas, TX
2018 3/19 • 7/9 • 11/5
2019 2/18 • 4/22 • 6/24 • 8/19 • 10/21 12/16

Cedar Rapids, IA
2018 6/12 • 12/4
2019 5/29 • 12/3

Houston, TX
2018 5/8 • 11/6
2019 1/21 • 4/15 • 7/15 • 10/21

Wilmington, CA
2018 4/10 • 10/16
2019 3/5 • 9/17

Introduction to SEL Relays

Dallas, TX
2018 3/27 • 7/17 • 11/13
2019 3/19 • 7/16 • 11/19

Cedar Rapids, IA
2018 6/19 • 12/11
2019 6/4 • 12/10

Houston, TX
2018 5/15 • 11/13
2019 1/29 • 7/23

Wilmington, CA
2018 4/17 • 10/23
2019 3/12 • 9/24

Safety Understanding the NFPA 70E

Austin, TX
2018 4/5 • 8/13
2019 4/5 • 8/12

Dallas, TX
2018 2/20 • 4/12 • 7/20
2019 2/22 • 7/19

Cedar Rapids, IA
2018 5/24 • 11/2
2019 5/24 • 11/1

Houston, TX
2018 3/29 • 9/17
2019 3/22 • 9/20

St. Paul, MN
2018 3/29 • 9/17
2019 3/29 • 9/27

Tulsa, OK
2018 7/20 • 11/29
2019 7/19 • 11/22

Safety

Electrical Safety for Qualified Electrical Workers

Austin, TX
- **2018** 5/15 • 8/14 • 11/13
- **2019** 2/12 • 5/14 • 8/13 • 11/12

Dallas, TX
- **2018** 3/6 • 4/3 • 5/8 • 6/5 • 7/10 • 8/7 9/11 • 10/9 • 11/6 • 12/11
- **2019** 1/8 • 2/5 • 3/5 • 4/2 • 5/7 • 6/4 7/8 • 8/6 • 9/10 • 10/8 • 11/5 12/10

Cedar Rapids, IA
- **2018** 6/19 • 11/6
- **2019** 2/12 • 6/11 • 10/1

Houston, TX
- **2018** 3/27 • 7/24
- **2019** 3/12 • 9/17 • 12/3

New Orleans, LA
- **2018** 3/27 • 6/19 • 8/28 • 11/13
- **2019** 3/26 • 6/18 • 8/27 • 11/12

St. Paul, MN
- **2018** 4/17 • 8/21 • 12/11
- **2019** 4/16 • 8/20 • 12/10

Tulsa, OK
- **2018** 4/10 • 7/17 • 10/16
- **2019** 1/22 • 4/9 • 7/16 • 10/15

Wilmington, CA
- **2018** 4/10 • 7/17 • 10/16
- **2019** 3/26 • 6/11 • 8/6 • 10/22

Electrical Safety for Managers

Austin, TX
- **2018** 2/12 • 11/16
- **2019** 2/11 • 11/11

Dallas, TX
- **2018** 3/5 • 11/5
- **2019** 2/4 • 11/4

Cedar Rapids, IA
- **2018** 6/11 • 10/1
- **2019** 6/10 • 9/30

Houston, TX
- **2018** 6/11 • 10/1
- **2019** 3/11 • 9/16

St. Paul, MN
- **2018** 4/16 • 12/10
- **2019** 4/15 • 12/9

Tulsa, OK
- **2018** 4/9 • 10/15
- **2019** 4/8 • 10/14

Lab Session – Electrical Safety for Qualified Electrical Workers

Dallas, TX
- **2018** 2/9 • 3/9 • 4/6 • 5/11 • 6/8 7/13 8/10 • 9/14 • 10/12 • 11/9•12/14
- **2019** 1/11 • 2/8 • 3/8 • 4/5 • 5/10 6/7 7/12 • 8/9 • 9/13 • 10/11 • 11/8 12/13

Cedar Rapids, IA
- **2018** 6/22 • 11/9
- **2019** 2/15 • 6/14 • 10/4

Houston, TX
- **2018** 3/30 • 7/27
- **2019** 3/15 • 9/20 • 12/6

Wilmington, CA
- **2018** 4/6 • 6/15 • 9/14 • 12/21
- **2019** 3/29 • 6/14 • 8/9 • 10/25

Electrical Safety for Non-Electrical Personnel

Austin, TX
- **2018** 5/3 • 11/2
- **2019** 5/3 • 11/1

Dallas, TX
- **2018** 6/1
- **2019** 1/25 • 6/3

Cedar Rapids, IA
- **2018** 7/20 • 12/20
- **2019** 7/19 • 12/20

St. Paul, MN
- **2018** 3/26 • 8/20
- **2019** 3/25 • 8/19

Tulsa, OK
- **2018** 7/16
- **2019** 1/21 • 7/15

Electrical Safety for Operators

Dallas, TX
- **2018** 10/25
- **2019** 4/12 • 10/25

Cedar Rapids, IA
- **2019** 3/21 • 10/1

Houston, TX
- **2019** 1/15 • 7/16

St. Paul, MN
- **2019** 1/22 • 7/23

Tulsa, OK
- **2019** 3/26 • 10/29

Electrical Safety for Utilities

Austin, TX
- **2018** 5/1 • 10/31
- **2019** 5/1 • 10/29

Dallas, TX
- **2018** 5/30 • 10/23
- **2019** 1/7 • 5/21 • 10/22

Cedar Rapids, IA
- **2018** 3/22 • 12/18
- **2019** 3/19 • 12/17

St. Paul, MN
- **2018** 4/30 • 9/20
- **2019** 4/30 • 9/24

Tulsa, OK
- **2018** 2/22 • 11/27
- **2019** 2/19 • 11/25

Electrical Safety Refresher

Austin, TX
- **2018** 2/16 • 8/17
- **2019** 2/15 • 8/16

Dallas, TX
- **2018** 2/5 • 6/4 • 10/8
- **2019** 2/4 • 6/3 • 10/7

Cedar Rapids, IA
- **2018** 2/16 • 6/15 • 10/5
- **2019** 2/18 • 6/17 • 10/7

Houston, TX
- **2018** 3/16 • 9/21
- **2019** 3/15 • 9/25

New Orleans, LA
- **2018** 3/30 • 8/31
- **2019** 3/29 • 8/30

St. Paul, MN
- **2019** 4/19 • 8/23 • 12/13

Tulsa, OK
- **2019** 4/12 • 10/18

Wind Generation Site Operations

Dallas, TX
- **2018** 6/25 • 9/24 • 12/17
- **2019** 2/4 • 6/24 • 9/23 • 12/16

Houston, TX
- **2019** 2/11 • 6/17 • 9/16 • 12/9

Wind Energy Technician Safety

Dallas, TX
- **2018** 4/17 • 8/28 • 11/27
- **2019** 4/16 • 8/27 • 11/19

Electrical Safety for Qualified Electrical Workers

About this course...

Designed for all maintenance and testing personnel who work on or near electrical equipment. This seminar meets and exceeds the basic OSHA mandated electrical safety training. All of the concepts of electrical safety are carefully explained in both classroom and hands-on sessions. These assure that the skills and knowledge can be demonstrated to meet the OSHA requirements. The basic classe and lab is primarily focused on applications below 600 volts, but an optional one day lab session is available for understanding and demonstrating the special skills and knowledge required for medium-voltage applications.

Who should attend...

Electrical technicians, HVAC technicians, field-service personnel, electricians, multi-craft workers, supervisors and engineers responsible for employees that work on or near energized equipment from 50 volts to 25,000 volts and who would be classified as "qualified" by OSHA.

Prerequisites...

Attendees should have basic electrical training.
Field experience recommended but not mandatory.

The Details...

Course Length . . . . . 2.5 days (20 contact hours)
Tuition $830
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of NFPA 70E.

You'll learn...

- Recognize, understand and avoid electrical hazards and risks (shock, arc flash and arc blast)
- How to develop and implement a JSA/JHA to address hazards and plan the required steps needed to work safely on or near energized conductors and circuit components.
- Safe work practices for work on or near metal clad switchgear, substations, motor control centers, medium-voltage motor starters and facility electrical systems.
- How to place equipment in an electrically safe work condition and properly utilize lockout/tagout (LOTO) requirements.
- Proper selection, maintenance, testing, use and storage of PPE. Learn their purposes and limitations.
- How to inspect insulated tools and understand their limitations of use
- How to select and apply temporary grounds as well as specific equipment grounding hazards including step and touch potentials
- How to use a transformer short circuit current/incident energy calculator and how to estimate incident energy under field work conditions
- How to perform absence-of-voltage testing to ensure an electrically safe work condition
- Review OSHA Electrical Safety Related Work Practice regulations (29CFR 1910.311-.335 as well as Articles 110, 12 and 130.
- Understand the current utilization of NFPA 70E and the annex tables

OSHA requires demonstration of skills and knowledge. Shermco's "qualified person" training provides documented tests and hands-on lab sessions to meet OSHA's mandates. Shermco's "qualified worker" training is designed to fully meet OSHA 29CFR1910.399, .332 and .333, as well as NFPA 70E Section 110.2.

Lab Session – Electrical Safety for Qualified Electrical Workers

About this course...

Technicians and supervisors are often hesitant to perform tasks on medium-voltage equipment without some prior training or experience. This one-day lab session pulls all the pieces together for planning and executing specific tasks on medium-voltage energized equipment. A short planning session is followed by hands-on practice in Shermco's training substation under the supervision of our field-experienced instructors.

Who should attend...

Qualified electrical workers, building owners, managers and operators who want to understand how to implement safe work practices for medium-voltage electrical systems. This session also provides practical experience for occupational health and safety managers and coodinaters.

Prerequisites...

Electrical Safety for Qualified Electrical Workers training course.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550

NOTE: This 8-hour program will begin immediately after the ESQEW course and will continue the next day until approximately 11AM. The actual time spent in this lab depends on the number of attendees.

You'll learn...

- Focusing on medium-voltage applications
- How to assemble all the components of an electrical safety program into a practical job plan
- Hazard identifaction and risk assesment
- Absence of voltage testing of medium-voltage switchgear
- Grounding of medium-voltage switchgear
- Changing medium-voltage air-switch fuses
- Inserting and removing (racking) medium-voltage circuit breakers
- Inspection of PPE and arc-rated clothing
- Practical hands-on lab sessions

Online registration now available at: www.shermco.com/training

Electrical Safety for Managers

About this course...

As is often the case, supervisors, managers and engineers who are responsible for plant maintenance are not actually the individuals performing hands-on maintenance operations. However, it is critical that they understand workplace safety policies and regulations so they can plan for the direction and training requirements of maintenance staff and assure that proper PPE, LOTO and other safety procedures are well understood and followed.

Who should attend...

Supervisors, managers, engineers, and others responsible for electrical workers.

Prerequisites...

None.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of NFPA 70E.

You'll learn...

- How electrical hazards in the workplace can affect your personnel, your company and those responsible for electrical workers
- Recognize electrical safety hazards and plan a course of action to address each one
- OSHA regulations and NFPA 70E requirements for employers taking specific measures to prevent electrical hazards from causing injury or death
- Electrical hazard awareness and recognition
- Managing liability created by electrical hazards
- Designing and implementing an Electrical Safety Program (ESP) including policies, safe work procedures and permits, hazard analysis, risk assessments and reduction, training, personal protective equipment (PPE) and other specific written program documents
- Performing an electrical hazard/risk analysis
- Using the NFPA 70E to interpret hazard/risk category classification (HRC) of a given task and assure adequate PPE
- How to incorporate changes implemented by the NFPA 70E update
- Identify the steps needed to protect employees who work on or near energized parts

Online registration now available at:
www.shermco.com/training

Electrical Safety for Non-Electrical Personnel

About this course...

Virtually every worker on an industrial or commercial job site works with or uses electrically-powered equipment. Most of these workers have no concept of the hazards they could possibly be exposed to by performing common, everyday tasks. Jewelry contacting energized components, overstressed power strips, coffee pots and heaters placed into the workplace all can increase the risk to the employee and to production if the worker is not aware of the potential issues involved. This course covers common situations that could place the non-electrical worker into dangerous situations.

Who should attend...

Industrial plant managers and supervisors, occupational health and safety coordinators, federal, provincial and municipal government building owners, managers, operators and building service technicians, private, commercial and institutional building owners, managers, operators and building service technicians, non-electrical skilled workers such as fitters, painters, carpenters, laborers, utility operators, equipment operators, janitors, waste handlers and warehouse workers. Other workers who may use or interact with electrical equipment and devices.

Prerequisites...

None.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550
CEUs. . . . . Available

Each open-enrollment student will receive a course text. Copies of NFPA 70E available at an additional cost.

You'll learn...

- Review of electrical hazards, their causes and the potential for injuries and fatalities
- Understand how to avoid these hazards
- Common situations that can increase risk to workers
- OSHA's electrical safety-related work practices regulation as it applies to non-electrical personnel
- Understand electrical LOTO and the Safe Work Zone
- Understand applicable OSHA regulations for non-electrical workers
- Understand and apply NFPA 70E requirements for unqualified persons
- Understand the safe approach distances for shock, arc-flash, arc-blast and the purpose of a safe work zone

This course is designed to meet the training requirements in NFPA 70E Section 110.2(A)(1)(C)(2).

Online registration now available at:
www.shermco.com/training

Electrical Safety Refresher

About this course...

This one day class is designed for those who have previously met the OSHA mandated training requirements of NFPA 70E and need to be re-certified. It is a concise review of the concepts and practices required for safe electrical work.

Who should attend...

Electricians, technicians, field-service personnel, supervisors and engineers responsible for employees who perform operation or maintenance work on electric utilization equipment, and others who may be considered "qualified persons" by OSHA.

Prerequisites...

Attendees should have completed OSHA-mandated electrical safety training.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550
CEUs. . . . . Available

Each open-enrollment student will receive a course text(copy of NFPA 70E available at an additional cost).

You'll learn...

- Electrical hazards and safety procedures for work on metal-clad switchgear, substations, motor control centers and facility electrical systems
- Proper selection, maintenance and use of required personal protective equipment (PPE)
- Energized and de-energized work policy and lockout/tagout (LOTO) requirements
- Safe use of portable electrical equipment, including inspection and testing
- Review of OSHA Electrical Safety-Related Work Practice regulations (29CFR1910.331-.335) as well as Articles 110, 120 and 130 of the NFPA 70E

This course is designed to meet the training requirements in NFPA 70E Section 110.2(D)(3).

Online registration now available at:
www.shermco.com/training

Electrical Safety for Utilities

About this course...

Electrical utility workers are exposed to live energy hazards every day, often at high voltages. Understanding the impact of these hazards and implementing the best practices for managing projects and tasks is critical to the safety of both personnel and equipment. This hands-on course is designed to address those special requirements and techniques.

Who should attend...

Linemen, technicians and supervisors responsible for operating and maintaining either utility- or non-utility-owned substations or electric power generation, transmission and distribution systems operating above 600 volts; safety professionals who work with linemen, technicians and supervisors, and system operators who could benefit from enhanced knowledge of electric power generation, transmission and distribution system safety requirements.

Prerequisites...

Attendees should have basic electrical knowledge. Field experience with generation, transmission and distribution systems operating above 600 volts is desired but not required.

The Details...

Course Length . . . . . 2 days (16 contact hours)
Tuition $830
CEUs. . . . . Available

Each open-enrollment student will receive a course text.

You'll learn...

- Electrical hazard awareness including the relationship between electrical hazards and personal injury or death
- Work rules such as determining safe approach distances for exposed energized conductors and components based on OSHA's 29CFR1910.269, and National Electrical Safety Code (NESC)
- The proper use of special precautionary techniques, personal protective equipment (PPE), insulating and shielding materials and insulated tools for working on or near exposed energized parts of electric equipment based on OSHA and NESC
- How to inspect PPE such as rubber insulating gloves, hot sticks, rubber blankets, hard hats, face shields and arc flash clothing, grounding devices
- Absence-of-voltage testing using contact and non-contact devices
- Lecture augmented with discussions; lab time (written and hands-on).

NOTE: Employees who work primarily with systems and equipment operating below 600 volts should enroll in Shermco's Electrical Safety for Qualified Electrical Workers course.

Online registration now available at:
www.shermco.com/training

Wind Energy Technician Safety

About this course...

A practical and intensive training program designed to enhance attendees' safety while working on or near a collector system and substation equipment. Safety training requirements and safe work practices for electrical workers are covered using the NFPA 70E, NESC, and Fed OSHA regulations including 29CFR1910.331-.335 and selected parts of 29CFR1910.269. PPE covered in this class includes hard hats, safety glasses, arc-rated vs. FR clothing, arc-rated flash suits, insulated hand tools, live-line tools, rubber insulating gloves and rubber insulating blankets. Classroom lectures will be supplemented with tests and practical exercises intended to reinforce best practices for operations and safety.

Who should attend...

Technicians, site managers, and safety personnel involved in the operation and maintenance of wind farm collector systems and substation equipment.

Prerequisites...

Basic electrical knowledge.

The Details...

Course Length . . . . . 3 day (24 contact hours)
Tuition $995
CEUs. . . . . Available

You'll learn...

- Equipment overview
- Electrical safety basics
- Hazards of electricity
- Inspecting PPE
- Medium-voltage detection exercise pad-mounted transformer isolation exercise substation switching exercise
- Arc flash and shock boundaries
- Safeguards for personnel protection
- Job hazard/safety analysis
- Placing equipment in an electrically - safe work condition
- Hazards of de-energized equipment
- Testing for the absence of voltages
- Personal protective equipment (PPE)

Online registration now available at:
www.shermco.com/training

Wind Generation Site Operations

About this course...

This course was developed to provide wind farm technicians and supervisors with a thorough understanding of wind farm electrical systems from the turbine to the substation utility connection. Classroom discussion and instruction covering the particular safety concerns of working in an environment that has voltages from 690 V up to 500 kV is detailed. Workers at wind generation sites require a full understanding of the electrical hazards and safe work practices used to protect workers from the shock and arc flash dangers. Classes can be extended to include practical field exercises in topics like pad-mount transformer switching, substation switching, and substation safety. Attendees should bring their assigned PPE to the class for use in the labs and practical exercises.

Who should attend...

Site managers, technicians, and safety personnel involved in the operation and maintenance of wind generators.

Prerequisites...

Basic knowledge of electrical systems.

The Details...

Course Length . . . . . 4.5 days (36 contact hours)
Tuition $1,405
CEUs. . . . . Available

Each open-enrollment student will receive a course text and a copy of NFPA 70E.

You'll learn...

- Wind farm electrical system overview
- Electrical hazard awareness
- Personal protective equipment
- Electrical safe work practices
- Substation walkthrough (on-site only) (conditions permitting)
- Lab session on air switch operation (on-site only) (conditions permitting)
- Overview of operation and maintenance
- Substation grounding
- Personal protective grounding
- Relays
- Battery systems
- Lab session on grounding (if available)
- Pad-mounted transformer (if available)
- Lab session on operation of PMT isolation switch (if available)

Understanding the NFPA 70E (2018 edition)

About this course...

This training program is an in-depth study of the NFPA 70E requirements in Chapters 1 and 2. NFPA 70E has a huge impact on your company's operations. Don't guess at what the 70E means; get the right information from the source. This course was developed by NFPA 70E committee members and is constantly updated with the latest changes as proposed by the Committee. 2018 edition is covered, including important changes.

Who should attend...

Technicians, field-service personnel, electricians, safety managers, safety professionals, supervisors and engineers responsible for employees who perform operation or maintenance work on electric utilization equipment or power generation, transmission or distribution installations with voltages from 50 volts and higher.

Prerequisites...

Students should have basic electrical training and knowledge.

The Details...

Course Length . . . . . 1 day (8 contact hours)
Tuition $550
CEUs. . . . . Available

Each open-enrollment student will receive a copy of NFPA 70E.

You'll learn...

- How to use the 70E effectively
- How The NFPA 70E is structured
- General safety requirements for electrical safety-related work practices
- Training requirements for qualified and unqualified persons
- Establishing an electrically safe work condition
- Lockout/tagout (LOTO) of electrical equipment
- Approach boundaries, shock and arc flash
- PPE categories and Tables 130.5(C), 130.5(G), 130.7(C)(15)(AB&C)
- Safety-related maintenance requirements for overcurrent protective devices (OCPD)
- NFPA 70E requirements for work on or near exposed energized conductors and circuit parts
- To effectively select arc flash and shock PPE based on NFPA 70E requirements when using the tables or when an arc flash study has to be performed
- How to understand the requirements of an Electrical Safety Program (ESP) and how to implement one
- How to understand what changes have been made to the NFPA 70E and how they may affect your company and its employees
- Seminar-based program with round-table discussions

Basic Electrical Fundamentals

About this course...

Whether you are new to the industry or are taking on additional responsibilities for electrical maintenance, a solid knowledge of the basics is essential to understanding the operations, maintenance and safety of any facility or factory site. This is a hands-on practical introduction to those concepts and skills that serves as a prerequisite to further training and career enhancements for both technicians and managers.

Who should attend...

This training program is of benefit to electricians, technicians and multi-craft workers working on or near electrical conductors and circuit parts. Many of these workers do not have a solid understanding of electrical basics and cannot move forward in the careers effectively; they don't know what they don't know. This program ensures that those workers, especially workers new to the electrical field, have an adequate understanding of basic electrical theory and systems.

Prerequisites...

None

The Details...

Course Length . . . . . 3 days (24 contact hours)
Tuition $995
CEUs. . . . . Available

Each student will receive a course text and Ugly's Electrical Reference.

You'll learn...

- Fundamentals of matter, energy and electricity
- Direct current (DC) fundamentals, including Ohm's Law and calculating voltage, current, resistance and power in the DC systems
- Battery theory and operation
- Alternating current (AC) fundamentals, including application of Ohm's and Kirchoff's Laws to single- and three-phase circuits
- How AC is generated
- Inductance, capacitance and reactance
- How transformers work

Online registration now available at: www.shermco.com/training

Basic Electrical Technical Skills

About this course...

A companion course to Basic Electrical Fundamentals, this course features a detailed, hands-on training regimen on the use of electrical testing equipment, electrical system trouble shooting and interpretation of electrical drawings. These are the basic skills required by any technician to safely and efficiently maintain and operate electrical equipment.

Who should attend...

This course is intended to teach basic testing and troubleshooting skills to electricians, technicians and multi-craft personnel so they can work safely around electrical control and power circuits. This course is also beneficial to non-electrical workers who must assist electrical workers in their tasks.

Prerequisites...

Attendees must have a solid understanding of basic electricity acquired through classroom/OJT or completion of Shermco's Basic Electrical Fundamentals training program.

The Details...

Course Length . . . . . 3 days (24 contact hours)
Tuition $995
CEUs. . . . . Available

Each student will receive a course text and Ugly's Electrical Reference.

You'll learn...

- How to use Digital Volt Ohm Meters (DVOMs) to safely test a variety of components
- How to interpret nameplates and dataplates of common electrical devices
- Proper method for operating switches and circuit breakers
- The explanation and use of overcurrent protective devices, molded-case circuit breakers and low-voltage power circuit breakers
- How to effectively troubleshoot electrical control and power circuits
- The basic understanding of electrical drawings and prints
- Safe work practices for voltage testing, megohmmeters and micro-ohmmeters

Online registration now available at: www.shermco.com/training

Troubleshooting and Electrical Print Reading

About this course...

This is a fundamental course developed for technicians and managers who need to understand electrical power systems: how they are designed, what can go wrong and how to find the problem areas. Several types of drawings and schematics are explained and hands-on exercises will demonstrate their practical use for basic troubleshooting.

Who should attend...

Electrical technicians, field engineers, electrical estimators, project managers, inspectors, contractors, journeyman electricians who depend on effective skills and knowledge of print reading.

Prerequisites...

Attendees should have basic electrical training, some field experience is recommended but not mandatory.

The Details...

Course Length . . . . . 2 days (16 contact hours)
Tuition $840
CEUs. . . . . Available

Each open-enrollment student will receive a course text.

You'll learn...

- Types of electrical system drawings, the basic layout and the purpose of each
- Legends used on electrical drawings
- How to understand and identify typical electrical symbols
- Standard ANSI/IEEE device numbers
- How circuits and devices interact with each other
- To understand the "logic" functions in electromechanical control systems
- To troubleshoot electrical problems using elementary diagrams, one-line diagrams and schematics
- To understand device functions and system operations such as circuit breaker and motor controls and transfer schemes
- Hands-on (~30%) training program augmented with round-table discussions, and perform practical exercises using elementary diagrams, one-line diagrams and schematics.

Online registration now available at: www.shermco.com/training

Fundamentals of Protective Relay Testing and Maintenance

About this course...

Protective relay calibration requires specific skills and knowledge not gained in the normal course of a technician's job duties. Often, technicians are given a test set, an overcurrent relay and an instruction book and told to figure it out. This creates uneven knowledge and can lead to very expensive mistakes. Even OJT training in this area can have problems if the person conducting the OJT does not have a full knowledge of the subject and/or poor communication skills. Shermco's relay training starts with the basics and progresses through instrument transformers, overcurrent, over/under voltage electromechanical relays, then to solid-state and digital relays.

Who should attend...

This course is intended for new relay technicians or those who have a need for basic protective relay training. This would include electrical technicians, supervisors and new P&C technicians.

Prerequisites...

Attendees should have a good understanding of electrical theory and principles and some field experience.

The Details...

Course Length . . . . . 4 days (32 contact hours)
Tuition $1520
CEUs. . . . . Available

Each student will receive a course text.

You'll learn...

- Operating principles, theory and application of common protective relays
- Operating principles and theory for current and voltage transformers
- Safety precautions for testing and maintaining protective relays
- How to maintain protective relays and look for common problems

Each open-enrollment student will receive a course text.

- Interpreting protective relay internal schematics
- Proper testing procedures for protective relays
- How to perform tests on electromechanical, solid-state and digital relays
- How to access digital relays to download information, such as events and error codes

Relays Covered...

- Overcurrent relays
- Over/under voltage relays
- Phase balance relays
- Percentage differential relays
- Motor protection relays

Online registration now available at: www.shermco.com/training

Introduction to SEL Relays

About this course...

This class provides hands on training to communicate with SEL protective relays and a basic understanding of SEL relay logic. The class will cover how to read and set SEL logic and focus on how to download Serial Event Recorder (SER) data and waveforms.

Who should attend...

This course is intended for those that are responsible for responding to equipment outages and troubleshooting switchgear issues. This would include electrical technicians, engineers, supervisors and maintenance electricians.

Prerequisites...

Attendees should have a good understanding of electrical theory and principles and some field experience.

Additional Requirements...

Due to the wide range of software available, we cannot guarantee the exact software or firmware used at your location will be available. Computers with the software provided will be supplied for the class. Attendees are encouraged to bring their own computers and load the software on their computer during the class.

The Details...

Course Length . . . . . 2 days (16 contact hours)
Tuition $820
CEUs. . . . . Available
Each open-enrollment student will receive a course text.

You'll learn...

- Basic understanding for SEL Logic
- Operation of Acselerator QuickSet Software
- How to log into SEL relays with no risk of accidently changing settings.
- How to change or modify settings
- How to communicate with different SEL relays
- How to program and download the Serial Event Recorder (SER)
- How to download waveform captures from the relay
- How to interpret waveform and SER data

Relays Used...

- SEL 701 Motor Protection relay
- SEL 751 Feeder Protection relay

Online registration now available at: www.shermco.com/training

Motor Maintenance and Testing

About this course...

This course is designed to provide electrical technicians and maintenance managers with a fundamental understanding of electric motors: how they work, how they break and what maintenance strategies can improve uptime performance. Both electrical and mechanical tests and how they are interpreted are reviewed including hands-on skills training and assessment. These analytical tests are critical for troubleshooting and are at the core of a comprehensive predictive maintenance program (PdM) for rotating machinery in commercial, industrial and utility operations.

Who should attend...

Plant maintenance technicians and electricians.

Prerequisites...

It is recommended that students have basic electrical training, some field experience and basic knowledge of rotating machinery.

The Details...

Course Length . . . . . 3 days (24 contact hours)
Tuition $1,320
CEUs. . . . . Available

Each open-enrollment student will receive a course text (copy of NFPA 70B available at an additional cost).

You'll learn...

- Basic theory, construction and operation
- Interpreting motor nameplates
- Mechanical and visual inspection procedures for motors
- Preventive (PM) and predictive (PdM) motor maintenance procedures
- Bearing failure causes and how to correct them
- NFPA 70B requirements
- Hands-on (~30%) training program augmented with round-table discussions

Online registration now available at: www.shermco.com/training

National Electrical Code 2017

About this course...

This course is designed to give new or experienced users of the National Electrical Code (NFPA70) practical experience in applying the rules in commercial and industrial applications. Through practical exercises, classroom instruction, and discussions, students will learn how to size conductors, motors, overcurrent protection, and raceways for safe installations. Students will utilize chapters 1 through 4 of the Code book to become proficient in finding applicable sections for most applications. Chapter 9 tables are also covered so students can properly utilize them in everyday work situations. The practical exercises are designed to help students become familiar with the structure of the Code and how to quickly find the articles needed for common applications.

Who should attend...

Electricians, electrical engineers, maintenance personnel, and facilities management who are responsible for safe and efficient use of electricity in their workplace.

Prerequisites...

An understanding of basic electrical theory and practical field knowledge of electrical installations. This is not a basic or beginner's NEC training course.

The Details...

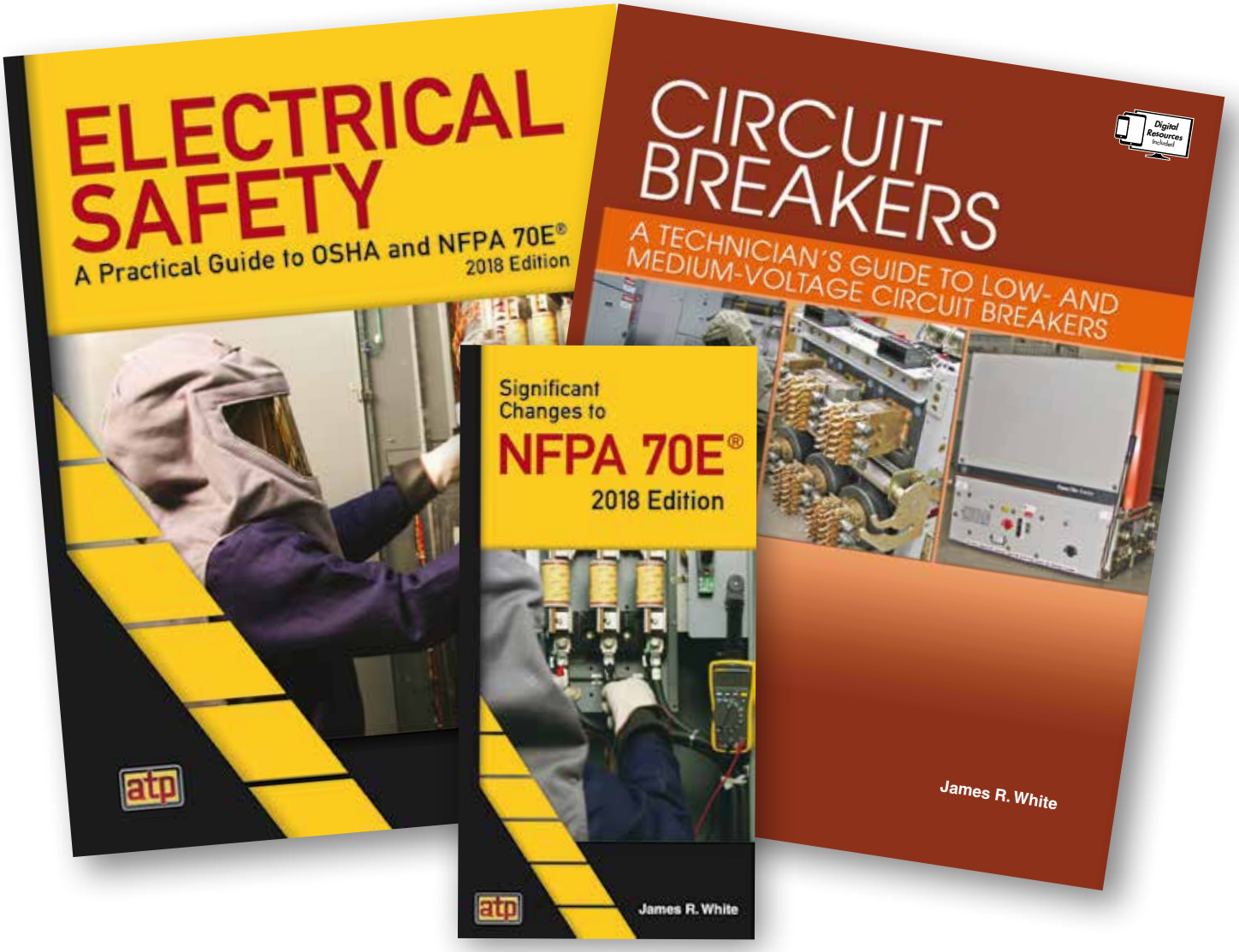
Course Length . . . . . 3 days (24 contact hours)
Tuition $1,320
CEUs. . . . . Available

Each student will receive a course text. 2017 Understanding the NEC, Volume 1 Articles 90-480, by Mike Holt

You'll learn...

- Purpose and scope of the NEC
- Definitions
- Requirements for installations wiring and protection
- Load calculations
- Overcurrent protection
- Wiring methods
- Conductors
- Underground installations
- Raceway and box fill calculations
- Conductors in parallel
- Conductor ampacity correction and adjustment
- Bonding and grounding Article 250
- Switchboards, switchgear, and panelboards
- Neutral conductor terminations
- Motors, motor circuits, and controllers

Online registration now available at: www.shermco.com/training



These publications, authored by Shermco's Jim White, are perfect supplements to your electrical safety reference material.

Electrical Safety: A Practical Guide to OSHA and NFPA 70E
A comprehensive overview of electrical safety in the workplace, presenting OSHA regulations and helping readers become more familiar with the 2018 edition of NFPA 70E. Drawing on his many years of experience in the field and as a safety instructor, Jim shares his knowledge of real-life incidents.

Significant Changes to NFPA 70E
Pocket guide that provides authoritative and succinct coverage of the major changes contained in the 2018 edition of NFPA 70E. With many years of experience in the field and as an instructor, Jim provides insightful interpretations of key provisions and concepts. This guide is a valuable reference tool for safety officials, technicians, and other industry professionals.

Circuit Breakers: A Technician's Guide to Low- and Medium-Voltage Circuit Breakers is a comprehensive overview of circuit breakers used in commercial, industrial, and utility applications and covers circuit breaker construction, operation, and maintenance. This new textbook covers insertion and removal (racking) of circuit breakers, safety and protection from arc-flash hazards, and troubleshooting procedures for circuit breakers.

To obtain a copy of these publications contact Shermco or visit American Technical Publishers at www.atplearning.com.

Shermco industries

5 WAYS TO REGISTER

- Call the Training Department at 972.793.5523
- Fax registration to 972.793.5542, Attn: Training Department
- Email registration form to traininginfo@shermco.com
- Mail completed registration form to:

  Shermco Industries
  Attn: Training Department
  2425 East Pioneer Drive
  Irving, Texas 75061

COURSE REGISTRATION FORM

Or register online:
www.shermco.com/training

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CITY	STATE/PROV	ZIP CODE
CONTACT NAME	EMAIL	
WORK PHONE	EXT	FAX
COURSE TITLE	COURSE LOCATION	COURSE DATE

Students You Wish to Enroll:

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STUDENT NAME	EMAIL
STUDENT NAME	EMAIL
STUDENT NAME	EMAIL
STUDENT NAME	EMAIL

Payment by Credit Card:

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PLEASE DO NOT MAKE ANY AIRLINE RESERVATIONS UNTIL YOU RECEIVE WRITTEN CONFIRMATION OF YOUR COURSE REGISTRATION

Terms and Conditions:

COURSE FEES: Enrollment is not guaranteed until full payment is received. You will be placed on a waiting list if your registration form does not include payment. All payments should be made payable to Shermco Industries, Inc. in U.S. dollars.

METHOD OF PAYMENT: Payment shall be made in one of the following methods:
1. Credit Card (American Express, MasterCard, VISA)
2. Purchase Order (copy must accompany registration form)
3. Check in the full amount

CONFIRMATION: Written confirmation will be emailed to you or the person registering you approximately 14 days prior to the first day of class. A map to the location of the class, information regarding hotel accommodations and other helpful information will accompany the confirmation letter.

All hotel reservations and charges, transportation arrangements and other fares are the responsibility of the student. Students should not schedule return flights to depart less than two (2) hours after the class is scheduled to end.

CANCELLATION POLICY: Shermco's cancellation policy allows a full refund for cancellations made ten (10) or more business days in advance of the class. Cancellations with less than ten (10) business days notice will result in a sixty percent (60%) refund of the tuition to cover expenses for which we have guaranteed payment. Clients may substitute students at any time prior to the start of the class. "No shows" are not eligible for refund.

NOTIFICATION FOR CANCELLATION OR CHANGES: Shermco reserves the right to cancel any class or make other changes in course content, schedule or facilities. Every effort will be made to provide prompt notification of any cancellation or other changes pertaining to course content, schedule or facilities.

Shermco industries

One Line. One Company.

2018-2019

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